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FIVE-YEAR REVIEW REPORT

Third Five-Year Review ReportforAnaconda Company Smelter SiteAnaconda,Deer Lodge County, Montana

September 2005

Prepared by:

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Region 8 – Montana Office
Helena, Montana

Approved by: Date:

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List of Acronyms

ADLC	Anaconda-Deer Lodge County
ARAR	Applicable or Relevant and Appropriate Requirements
ARCO	Atlantic Richfield Company
ARWWS	Anaconda Regional Water, Waste & Soils
AMC	Anaconda Minerals Company
AOC	Administrative Order on Consent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
DPS	Development Permit System
MDEQ	Montana Department of Environmental Quality
EAY	East Anaconda Yards
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
IC	Institutional Control
MCL	Maximum Contaminant Level
MHWA	Montana Hazardous Waste Act
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
OW/EADA	Old Works/East Anaconda Development Area
ppm	parts per million
POC	Point of Compliance
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RD/RA	Remedial Design/Remedial Action
RDU	Remedial Design Unit
ROD	Record of Decision
TAG	Technical Assistance Group
TCLP	Toxicity Characteristic Leaching Procedure
UAO	Unilateral Administrative Order
WMA	Waste Management Area

Executive Summary

The Third five-year review of the Anaconda Company Smelter Site in Anaconda, Montana was completed in September 2005. The results of the five-year review indicate that the remedies constructed to date are protective of human health and the environment. Remaining remedies to be implemented are also expected to be protective of human health and the environment. Generally, areas that have been remediated are functioning as designed, and for the most part are being managed and maintained in an appropriate manner. A few deficiencies, that do not immediately impact the protectiveness of the remedy, were noted.

EPA is currently conducting the Remedial Design for the last operable unit at the site (Anaconda Regional Water, Waste, and Soils). This Rmedial Design is anticipated to review all past actions and ongoing operations to determine their consistency with the final remedy as well as their adequacy in protecting human health and the environment. Currently in the course of the ARWWS design, EPA is reviewing data from past and ongoing projects, inspecting the performance of past projects, and designing for improvements when needed. EPA will also be reviewing and updating ARARs (e.g., arsenic MCL) where appropriate and update any Record of Decision(s) as necessary. EPA, is also working with the community and local officials during this design process. The scope of these activities essentially duplicates and exceeds those of the five-year review.

For the above reasons, this five-year review is being conducted only for those portions of the site where remedial construction has been completed and where EPA has determined that the remedy is operational and functional. For each of those portions, a remedial action summary, five-year review finding, technial assessment, identification of any issues and/or recommendations, and a protectivenss statement is provided.

Mill Creek Operable Unit

See Old Works/East Anaconda Development Area Operable Unit

Flue Dust Operable Unit

The remedy for the Flue Dust Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Flue dust, a principal threat waste at the site, was treated to below TCLP standards for arsenic, lead and cadmium. The treated flue dust was placed and is now contained in an engineered repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal, ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Flue Dust repository will continue to be evaluated under the Smelter Hill Repository Complex Post-Closure Operations and Maintenance Plan.

Arbiter Operable Unit

The remedy for the Arbiter Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Arbiter process waste, a principal threat waste at the site, was removed and placed in a RCRA designed repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal,

ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Arbiter repository will continue to be evaluated under the Smelter Hill Repository Complex Post-Closure Operations and Maintenance Plan.

Beryllium Operable Unit

The remedy for the Beryllium Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Beryllium, a principal threat waste at the site, was removed and placed in a RCRA designed repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal, ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Beryllium repository will continue to be evaluated under the Smelter Hill Repository Complex Post-Closure Operations and Maintenance Plan.

Old Works/East Anaconda Development Area Operable Unit

The completed portions of the remedy for the Old Works/East Anaconda Development Area (OW/EADA) Operable Unit of the Anaconda Company Smelter NPL Site are protective of human health and the environment. The remaining remedy is also expected to be protective of human health and the environment upon completion. All waste materials and/or contaminated soils, with the exception of the Industrial Area, have been covered or treated to below the appropriate action levels. The constructed covers and revegetated areas continue to be monitored with active maintenance. Institutional controls, primarily through the Superfund Planning Area Overlay District (SPAOD) portion of the DPS, and restrictive covenants, are expected to protect remedies and ensure that development at the site is conducted in a manner protective of human health and the environment. Remedial Action within the Industrial Area will provide for the removal, cover, and/or revegetation of the remaining waste and contaminated soils. Construction is underway in the Industrial Area and is anticipated to be completed prior to the next five year review. The OW/EADA remedies will continue to be evaluated under the Anaconda Regional Water Waste & Soils OU. The completed remedies will continue to be evaluated under the sitewide Monitoring and Maintenance (M&M) Plans.

Community Soils Operable Unit

The completed portions of the remedy for the Community Soils Operable Unit of the Anaconda Company Smelter NPL Site are protective of human health and the environment. The remaining portions of the remedy are also expected to be protective of human health and the environment upon completion. Approximately half of the 300 residential yards identified for remediation have been completed to date. The remedial action addressed the immediate threats by removing contaminated soils in residential yards (those exceeding action levels) and replacing them with clean backfill. Remaining yards, identified for remediation, will be completed in 2006. All residential areas within the Community Soils OU are expected to be monitored through institutional controls, primarily through the Community Protective Measures Program, to educate residents concerning potential exposure within a residential area and to provide for additional sampling and remediation, as needed. Areas of future residential and commercial development will be monitored and remediated, if necessary, through the Development Permit

System, to ensure that development at the site is conducted in a manner protective of human health and the environment.

Remedial action within the commercial areas adjacent to the railroad will provide for removal, cover, and/or revegetation of waste and contaminated soils. Construction is anticipated to begin in 2005 and be completed in 2006/2007. The Community Soils remedy will continue to be evaluated under the Anaconda Regional Water Waste & Soils OU.

Anaconda Regional Water, Waste & Soils Operable Unit

The completed portions of the remedy for the Anaconda Regional Water, Waste and Soils (ARWWS) Operable Unit of the Anaconda Company Smelter NPL Site are protective of human health and the environment. The remaining portions of the remedy are also expected to be protective of human health and the environment upon completion. Remedial actions completed to date include the Anaconda Ponds (RDU 4), and Cashman Concentrate (RDU 11) which are protective of human health and the environment. Construction at the remaining remedial design units is expected to be completed over the next ten to fifteen years.

Five-Year Summary Form

Issues:

Nine general deficiencies and/or concerns were identified:

- Areas of poor vegetation at the Drag Strip Subarea of the Old Works/East Anaconda Development Area Operable Unit;
- Areas of poor vegetation with the temporary covers at the Red Sands Subarea of the Old Works/East Anaconda Development Area Operable Unit;
- Areas of poor vegetation with the Anaconda Ponds dike faces at the Anaconda Regional Water, Waste & Soils OU
- Potential for buried hazardous waste and beryllium in the East Anaconda Yard Subarea of the Old Works/East Anaconda Development Area Operable Unit;
- Lack of contaminant characterization of uncapped portion of the East Anaconda Yard Subarea of the Old Works/East Anaconda Development Area Operable Unit;
- Lack of a final disposition plan for leachate from the Smelter Hill Repository Complex;
- Concern with exposure to attic dust in residential areas;
- Concern with the long term funding and implementation of institutional controls through Anaconda- Deer Lodge County; and
- Concern with air and ground water quality in the community of Opportunity.

None of the deficiencies currently cause the remedies to be unprotective

Recommendations and Follow-up Actions:

The following actions are required to correct these deficiencies and/or address concerns to ensure that the protectiveness is maintained in the future:

- Provide additional maintenance of the vegetation at the Drag Strip Subarea;
- Evaluate redevelopment potential and use of temporary covers at the Red Sands Subarea;
- Provide additional maintenance of the dike face soil covers at the Anaconda Ponds;
- Investigate the potential for additional buried hazardous waste and/or beryllium at the East Anaconda Yards Subarea and/or evaluate the need for additional institutional controls;
- Characterize contaminants within the uncapped portion of the East Anaconda Yards and/or evaluate the need for additional institutional controls;
- Determine the final disposition of repository leachates;
- Develop protocol to address potential exposure to attic dust;
- Develop long term implementation and funding plan for institutional controls; and
- Provide air and ground water monitoring in the community of Opportunity.

Protectiveness Statements:

The remedial actions for the *Mill Creek, Flue Dust, Arbiter, Beryllium, and Old Works/East Anaconda Development Area Operable Units* are protective of human health and the environment. The remedial actions for the *Community Soils and Anaconda Regional Water, Waste and Soils Operable Units* are expected to be protective of human health and the environment. Because the remedial actions at all of the operable units are protective and/or are expected to be protective, the remedy for the *Anaconda Company Smelter Site* is protective of human health and the environment.

Other Comments:

Representatives from the Montana Department of Environmental Quality, Anaconda-Deer Lodge County and the Atlantic Richfield Company participated at the August 17, 2005 site inspection. Comments received have been incorporated into this Five Year Review, where appropriate..

All remedies completed to date for all Anaconda Operable Units will be further evaluated under the *Anaconda Regional Water, Waste, and Soils (ARWWS) Operable Unit.* Deficiencies identified under this Five-Year Review will be addressed under the ARWWS OU. Until final remediation is completed under the ARWWS OU, EPA will continue to monitor the completed actions through the existing Operation and Maintenance Plans.

Anaconda Company Smelter Site
Third Five-Year Review Report

I Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings and conclusions are documented in this Five-Year Review Report. In addition, the Five-Year Review Report identifies issues found during the review, if any, and identifies recommendations to address them.

The Agency is preparing this Five-Year Review Report pursuant to CERCLA Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of the facilities for which such review is required, the results of all such review, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR Section 300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The United States Environmental Protection Agency (EPA) Region 8, conducted this five-year review of the remedy implemented at the Anaconda Company Smelter site in Deer Lodge County, Montana. This review was conducted by the Remedial Project Manager (RPM) for the entire site from November 2004 through September 2005. This report documents the results of the review.

This is the third five-year review for the Anaconda Company Smelter Site. The triggering action for this review is the completion of the second five year review on December 30, 1999. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unrestricted use and unlimited exposure.

The Anaconda Smelter five-year review was led by Charles Coleman, Remedial Project Manager for the Anaconda Company Smelter site. The following team members assisted in the review:

- Ken Brockman, USBOR Construction Oversight
- Diana Hammer, EPA Community Involvement Coordinator
- Joe Griffin, DEQ Project Officer

EPA is currently conducting the remedial design for the last operable unit at the site (Anaconda Regional Water, Waste, and Soils). This remedial design is anticipated to review all past actions and ongoing operations to determine their consistency with the final remedy as well as their adequacy in protecting human health and the environment. Currently in the course of the ARWWS design, EPA is reviewing data from past and ongoing projects, inspecting the performance of past projects, and designing for improvements when needed. EPA will also be reviewing and updating ARARs (e.g., arsenic MCL) where appropriate and update any Record of Decision(s) as necessary. EPA, is also working with the community and local officials during this design process. The scope of these activities essentially duplicates and exceeds those of the five-year review. For the above reasons, the scope of this five year review has been narrowly defined.

This five-year review is being conducted only for those portions of the site where remedial construction has been completed and where EPA has determined that the remedy is operational and functional. For each of those portions, a remedial action summary, five-year review finding, technical assessment, identification of any issues and/or recommendations, and a protectiveness statement is provided.

Future five-year reviews will be more comprehensive and reorganized to, assess all actions within a geographical area (to be determined in the ARWWS design). The five-year review will also become an integral part of the overall site monitoring and maintenance activities required at the site.

The completed five-year report is available in the informational repositories located at the Hearst Free Library in Anaconda, Montana Tech in Butte, and the EPA Record Center in Helena. Notice of the completion will be placed in the local newspaper and in the next site fact sheet. A brief summary of the report will be distributed to community members.

II Site Chronology

Table 1 lists the chronology of events for the Anaconda Company Smelter site.

Table1: Chronology of Site Events

Date	Event
1980	Initial discovery of the problem
9/83	NPL listing
1983- 1986	Smelter demolition and stabilization actions
1986- 1988	Mill Creek removal action
10/87	Mill Creek RI/FS completion
10/87	Mill Creek ROD signature
1/88	Mill Creek design start and completion
1991- 1992	Community Soils removal action
12/88	Mill Creek remedial action completion
9/91	Flue Dust RI/FS completion
9/91	Flue Dust ROD signature
1992	Old Works removal action
1992 – 1994	Arbiter removal action
1992- 1994	Beryllium removal action
2/92	Flue Dust design start
6/93	Flue Dust design completion
1992 – 1994	Flue Dust construction
3/94	OW/EADA RI/FS completion
3/94	OW/EADA ROD signature
5/94	OW/EADA design start
5/94	Golf Course design completion
1994 – 1997	Golf Course construction
11/94	First five-year review

8/96	Red Sands design completion
1996 - 1997	Red Sands construction
9/96	Flue Dust remedial action completion
9/96	Community Soils RI/FS completion
9/96	Community Soils ROD signature
9/97	Community Soils design start
7/98	Aspen Hills/EAY design completion
1997- 1998	Aspen Hills/EAY construction
7/98	Mill Creek design completion
1998 - 1999	Mill Creek construction
7/98	Drag Strip design completion
1998- 1999	Drag Strip construction
9/98	ARWWS RI/FS completion
9/98	ARWWS ROD signature
4/99	ARWWS removal action (Warm Springs Creek)
9/99	Anaconda Ponds design start
12/99	Second Five Year Review
6/00	ARWWS Remedial Design Start
6/00	Aspen Hills Remedial Action Completion
6/00	Mill Creek Remedial Action Completion
6/00	East Anaconda Yards Remedial Action Completion
9/00	Anaconda Ponds Remedial Design Completion
9/00	Industrial Area Remedial Design Completion
2001-2002	Anaconda Ponds Construction
9/01	Red Sands Remedial Action Completion
9/01	Drag Strip Remedial Action Completion

9/01	Golf Course Remedial Action Completion
2002-	Industrial Area Construction
5/02	Triangle Waste Remedial Design Completion
2002-2004	Triangle Waste construction
8/02	Loop Track Remedial Design Completion
2002-2003	Loop Track Construction
8/02	Stucky Ridge (Subarea 4) Remedial Design Completion
2002-2004	Stucky Ridge (Subarea 4) Construction
8/02	Residential Soils Remedial Design Completion
11/02	A-Cell Remedial Design Completion
2003-	Residential Soils Construction
9/03	Slag Remedial Design Completion
9/03	Active Railroad (West Valley) Remedial Design Completion
10/03	Cashman Concentrate Remedial Design Completion
2003-2004	Cashman Concentrate Construction
9/04	Cashman Concentrate Remedial Action Completion

III Site Background

The Anaconda Smelter site is located at the southern end of the Deer Lodge Valley, at and near the location of the former Anaconda Minerals Company (AMC) ore-processing facilities (Figure 1). These facilities were developed to remove copper from ore mined in Butte from about 1894 through 1980, when the smelter closed. The Atlantic Richfield Company (Atlantic Richfield) purchased AMC in 1977 and is the primary Potentially Responsible Party (PRP) at the site. Other PRPs include RDM Multi-Enterprises, RARUS Railway, and CSS Enterprises.

More than 300 square miles of land surrounding the smelter have been affected by operations at the Anaconda Company Smelter (Figure 2). One hundred years of milling and smelting operations. including discharges into the air and streams, have scattered wastes that are high in arsenic and metals over a wide area. Estimated waste volumes at the site include approximately 230 million cubic yards of concentrated mine tailings, 30 million cubic yards of furnace slags, 500,000 cubic yards of flue dust. In addition to the millions of cubic yards of tailings, furnace slag, flue dust approximately 20,000 acres of soil have been contaminated by airborne emissions and millions of gallons of ground water have been polluted from wastes and soils.

The milling and smelting wastes contain elevated concentrations of arsenic, as well as copper, cadmium, lead and zinc. These contaminants pose a potential risk to human health and to life in nearby streams, and adjacent lands.

In 1980, Atlantic Richfield closed the smelter and thousands of people lost their jobs. In September 1983, the Environmental Protection Agency (EPA) placed the area surrounding the smelter on its Superfund National Priorities List (NPL), and EPA, the State of Montana and the Atlantic Richfield Company began investigations into the extent of contamination.

Because of the size of the facilities, the hundred-year operation, the large volume of wastes and the wide area contaminated, the site has been divided into smaller, more manageable Operable Units. A summary of the actions taken at the site is discussed below.

Anaconda Smelter Demolition and Initial Stabilization Actions:

Between 1983 and 1986 EPA provided oversight of the smelter demolition, on-site and offsite material transport, and initial stabilization efforts to control fugitive dust from waste sources.

Mill Creek Children Relocation Removal Action:

The Centers for Disease Control conducted a urinary arsenic survey in March 1985 which showed that preschool children from the community of Mill Creek had higher urinary arsenic levels than children of other communities in the Anaconda area. In May 1986, EPA together with the Federal Emergency Management Agency (FEMA), dealt with immediate public health concerns in Mill Creek by temporarily relocating families with young children or people with special health problems. Urine-arsenic levels in all children who were temporarily relocated dropped to the normal range after relocation. EPA and FEMA also supervised the control of flue

dust on Smelter Hill, above the community, and of dust from unpaved community roads.

Mill Creek Relocation:

In 1987, as a final remedy, EPA selected permanent relocation of all Mill Creek residents. EPA entered into a Consent Decree with Atlantic Richfield in January 1988 to implement the relocation. All residents were relocated by the fall of 1988. The home demolition and site stabilization activities were completed later that year. Demolition debris and contaminated soils were disposed of on Smelter Hill. Foundations were buried on site, and the area was regraded and replanted. Fences and signs were installed to control access and maintain the vegetation.

Anaconda Yards Time-Critical Removal Action:

Under an emergency removal action, between 1991 and 1992, arsenic-contaminated soils were removed from three Anaconda neighborhoods: Teresa Ann Terrace, Elkhorn Apartments and Cedar Park Homes. EPA entered into an Administrative Order on Consent (AOC) with Atlantic Richfield in 1991 to implement yard removals. Work on residential soils consisted of removing 18 inches of contaminated soil and replacing it with two inches of lime rock overlain by 16 inches of clean soil. In developed yards, topsoil and sod were replaced; in undeveloped areas, the soil was seeded.

Arbiter Non-Time-Critical Removal Action:

The Arbiter Plant (copper refining) was designed to produce cathode copper from sulfide ores using an ammonia leach. Wastes produced by the plant, including arsenic, cadmium, lead and zinc, were slurried and piped to disposal ponds next to the plant. The excavation of the Arbiter material was completed in December 1992. The material, consisting of about 275,000 cubic yards of soils and sludge, was placed in a lined hazardous-waste repository on Smelter Hill. The repository was closed in November 1994.

Beryllium Non-Time-Critical Removal Action:

A beryllium flake-metal pilot plant and a beryllium oxide pilot plant were operated briefly at the site. Following plant closure, stored wastes and contaminated materials in drums were disposed of in the B-2 cell of the Opportunity tailings ponds and on Weather Hill. EPA entered into an AOC with Atlantic Richfield in 1992 to remove these materials. Excavation of beryllium at the B-2 site began in September 1992. The beryllium-contaminated materials were placed in one-cubic-yard boxes. About 1,100 boxes were hauled from the B-2 site to a lined hazardous-waste repository on Smelter Hill. The boxes were placed in the repository and cement grout was added for additional protection. Excavation of beryllium material at the Weather Hill site was completed by early January 1993. All of the beryllium wastes have been hauled to and consolidated in the repository, which was closed in 1994.

Old Works Stabilization Removal Action:

The Old Works Operable Unit (OU) contains large volumes of various wastes and debris that originated from copper-ore milling, smelting and refining operations at the Old Works Site (Upper and Lower Works) from 1884 tol902. In 1992, EPA entered into an agreement with Atlantic Richfield to address the immediate health and environmental concerns stemming from

contaminants released into Warm Springs Creek. The remedy included stabilizing the Red Sands adjacent to Warm Springs Creek and repairing breaks in the creek levees. Fencing was also installed to limit access.

Flue Dust Remedial Action:

Flue dust. a by-product of copper smelting, contains an average concentration of 14.6 percent copper, 4.9 percent arsenic, and 0. 14 percent cadmium. In 1991 - EPA selected a remedy to stabilize the dust with cement and lime, and then place treated materials in a repository. EPA entered into a consent decree with Atlantic Richfield to implement the flue dust remedy in December 1992. Treatment of over 500,000 cubic yards of flue dust was completed in December 1993. The repository used a liner, leachate-collection-and-detection system, as well as a cap with the same liner, cover soil and vegetation. The repository was closed in November 1994.

Old Works/East Anaconda Development Area Remedial Action:

EPA selected a remedy in 1994 for the Operable Unit known as Old Works/East Anaconda Development Area. The cleanup addressed approximately 2,000 acres of developable property and the protection of Warm Springs Creek. EPA issued a Unilateral Administrative Order (UAO) to Atlantic Richfield in 1994 to:

_ cap or treat contaminated wastes and soils;
_ manage surface water runoff;
_ prevent flood erosion;
_ manage future land and water use; and
_ preserve historic features.

Waste and soils exceeding arsenic levels of 1,000 and 500 parts per million (ppm), for recreational and commercial/industrial areas respectively, were cleaned up. Construction, including a Jack Nicklaus-designed golf course, began in June 1994. The golf course opened to the public in May 1997. The remedial action is completed at the majority of the OU with the exception of the Industrial Area.

Community Soils Remedial Action:

In 1996, EPA selected a final remedy for addressing all remaining residential soils, including railroad-bed materials in Anaconda. The remedy includes

_ cleaning all current residential yards that exceed 250 ppm soil-arsenic concentration, through removal and replacement with clean soil, and placement of a vegetative or other protective barrier;
_ cleaning all current commercial/industrial soils high in arsenic, through replanting and/or installing engineered covers;
_ and constructing an engineered cover over contaminated railroad-bed material within the community of Anaconda to prevent direct contact with contaminated materials, and to reduce potential for erosion and transport of contaminants to residential and commercial/industrial areas.

Remedial action began in 2000. To date, approximately 125 yards have been remediated. Remaining yards are expected to be completed in 2006/2007.

Anaconda Regional Water, Waste and Soils Remedial Action:

This is the last operable unit of the Anaconda Smelter NPL Site, and addresses all remaining contaminated areas at the site. This OU will also bring closure to the all above previous remedial actions (discussed above) at the site. EPA signed a Record of Decision for the ARWWS OU in September 1998. Remedial design began in 2000 and is still in progress. Remedial action has been conducted on portions of the OU, including the Anaconda Ponds Remedial Design Unit (RDU 4), Cashman Concentrate (RDU 11), Triangle Waste and portions of the Opportunity Ponds (RDU 8) and upland portions of Stucky/Ridge (RDU 1) and Smelter Hill (RDU 3). Designs have also been completed for Slag (RDU 12) and portion of the Active Railroad (RDU 5). EPA anticipates preparing an Explanation of significant Differences in 2006 to document changes to the 1998 Record of Decision. Remaining designs are expected to be completed in 2006 with remedial actions being constructed over the next 10 to 15 years.

Community Involvement

Through its Technical Assistance Grant program, EPA provides funds to residents (through a representative group) in Anaconda to review EPA studies and cleanup work and to relay their findings to the community. Economic redevelopment and site reuse is a primary focus of the TAG group. In 2004, EPA conducted interviews with residents and local officials in an effort to update the Community Involvement Plan.

IV Mill Creek Operable Unit

A Remedial Action Summary

1. Location and History

The former community of Mill Creek is located 1.5 miles east of Anaconda and adjacent to the Smelter complex (Figure 3). Approximately 37 families were affected by uncontrolled releases of contaminants from the Smelter facility.

The Centers for Disease Control (CDC) conducted a urinary arsenic survey in March 1985 which showed that pre-school children from the community of Mill Creek had higher urinary arsenic levels than children of other communities in the Anaconda area. CDC concluded that the elevated urinary arsenic levels in children at Mill Creek indicated that high arsenic levels continued in young children through the summer and fall of 1985 in spite of efforts to clean Mill Creek homes.

In May 1986 EPA addressed the immediate public health concerns in Mill Creek by temporarily relocating families with young children or individuals with special health problems, stabilizing flue dust on Smelter Hill above the community, and controlling dust from unpaved roads in the community. All children who were temporarily relocated had urine arsenic levels that dropped to normal levels after leaving Mill Creek. Atlantic Richfield subsequently purchased several properties and relocated all but 8 families.

2. Remedy Selection

Between 1986 and 1987, the EPA and the Federal Emergency Management Agency (FEMA) temporarily relocated residents of Mill Creek. The EPA selected remedy for Mill Creek in 1987 featured:

1) permanently relocating all remaining Mill Creek residents;
2) stabilizing the area temporarily;
3) storing relocation or demolition debris and disposing of it, along with contaminated soils from Mill Creek, in the final cleanup of Anaconda;
4) regrading and replanting area disturbed by relocation/demolition activities;
5) monitoring and maintaining the vegetation and the fence installed around the area; and
6) imposing short-term controls on access and land use.

3. Remedy Implementation

EPA entered into a consent decree with Atlantic Richfield to implement the relocation remedy for Mill Creek residents on January 7, 1988. The permanent relocation of residents was completed in the fall of 1988. Completion of the home demolition and site stabilization activities was completed in late 1988. Demolition debris and contaminated soils were disposed on Smelter, Hill. Foundations were buried on-site and the area was regraded and vegetated. Fencing was installed along with signing to control access and maintain the vegetation.

The remaining area of Mill Creek was consolidated into the Old Works/East Anaconda Development Area OU (Mill Creek Addition) and was further evaluated under the RI/FS for that

OU. The OW/EADA ROD, signed in March 1994, provided for the cleanup of soils exceeding 1000 ppm arsenic utilizing engineered covers and/or revegetation techniques. Water issues (ground and surface water) were deferred to the Anaconda Regional Water, Waste and Soils Operable Unit. The final design for Mill Creek soils is discussed in the OW/EADA- Mill Creek Addition section.

V FLUE DUST OPERABLE UNIT

A Remedial Action Summary

1 Location and History

Flue dust is a by-product of copper smelting and contains an average copper concentration of 14.6 percent, 4.9 percent arsenic, and .14 percent cadmium. Flue dust also contains magnesium, mercury, zinc, and other metals and is- considered a hazardous waste (RCRA characteristic) because it fails the Toxicity Characteristic Leaching Procedure (TCLP) for arsenic and cadmium. Most of the flue dust generated by smelter operations was reprocessed. However, approximately 316,500 cubic yards remained stockpiled at nine locations on and around Smelter Hill.

2 Remedy Selection

EPA selected a remedy for Flue Dust in 1991 featuring:

1) stabilizing via cement and lime approximately 316,500 cubic yards of flue dust; and
2) placement of treated materials in an engineered repository.

The remedy required that flue dust from the nine locations be excavated and treated to meet RCRA regulations. Processed material would then be transported to an on site repository for disposal. Design requirements for the repository would meet all Montana Solid Waste Management Act and RCRA Subtitle D provisions and some relevant and appropriate MHWA and RCRA Subtitle C provisions. At a minimum, the repository would include a liner, leak detection and collection system, groundwater monitoring wells upgradient and downgradient from the repository, and a cap. Long-term maintenance and monitoring and limiting site access and use would be required.

3 Remedy Implementation

EPA entered into a consent decree with Atlantic Richfield to implement the flue dust remedy in December 1992 (Civil Action No. CV-92-76-BU-PGH (D.MT)). Treatment of over 500,000 cubic yards of flue dust, including flue dust from the main flue, was completed in December 1993. All flue dust that was treated passed the TCLP measure. The repository was constructed using a bentonite/HPDE liner, leachate collection and detection system and a cap consisting of the same bentonite/HPDE liner, cover soil and vegetation. Closure of the repository was completed in November 1994.

4 Operation and Maintenance

EPA approved an Interim Post-Closure Operation and Monitoring Plan for the Smelter Hill Repository Complex (SHRC), dated August 1996, to include ground water monitoring, leachate management, post-closure cover inspection and monitoring, surface water diversion

system maintenance, and site security. A pre-final inspection of the remedial action was completed in March of 1995, with a final inspection completed during the summer of 1996. EPA approved the Remedial Action Completion Report on September 30, 1996.

EPA receives annual monitoring and maintenance reports for the Smelter Hill Repository Complex which includes the Flue Dust, Arbiter, Beryllium and Aspen Hills repositories. Ground water is collected from five SHRC monitoring wells (Figure 4). The 2004 monitoring results indicate that all constituents were consistent with historic background levels with the exception of arsenic in Monitoring Well 3 which exceeded the Maximum Contaminant level (MCL) for dissolved arsenic (139 ug/l). A further evaluation of site groundwater will be conducted in the review of the Final Operation and Maintenance Plan.

Leachate is monitored on a quarterly basis and is pumped from the repository when the leachate level reaches an elevation approximately one foot from the bottom of the collection sump. 21,000 gallons of leachate were pumped in 2004. A graphical presentation of cumulative volume pumped versus time is shown on Figure 4. Analytical results are shown in Table 1. The pumped leachate is transported to the Opportunity Ponds (B-2 Repository) where it is sprayed onto the surface of the ponds and evaporated (Figure 3). Final disposition of the leachate will be identified in the Final Operation and Maintenance Plan.

The Flue Dust repository cover is inspected annually and was rated as good (25 - 35% vegetation cover) in 2004 (Table 2). Pocket gopher activity was noted.

Weeds and debris are routinely removed from ditches and culverts. Weed spraying is also conducted annually.

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last Five-Year Review the status of the operable unit continues to be in the Interim Operation and Maintenance (O&M) phase. The OU is in interim status because the Flue Dust ROD deferred cleanup of surface and ground water to the Anaconda Regional Water, Waste & Soils Operable Unit. O&M will remain in interim status until the final M&M Plans are completed under the ARWWS OU.

2 Site Inspection

A site inspection was conducted on August 17, 2005. The remedy appears to be functioning as designed. Final disposition of leachate was discussed. Final leachate disposition will be evaluated and a determination made in the Final Smelter Hill Repository Complex Post-Closure O&M Plan.

C Assessment

1 Question A - Is the remedy functioning as intended by the decision

documents?

The remedy appears to be functioning as designed. Although there has been no sampling of the treated flue dust after disposal, the collected leachate is measured and sampled on an annual basis. After twelve years, leachate is still being produced. Volumes and metal concentrations of the leachate have decreased over time. The repository cover appears to be functioning as designed. Both the vegetation performance and erosion of the cover will continue to be monitored on an annual basis.

Atlantic Richfield has in place and continues to enforce, a Health and Safety Plan at Anaconda Smelter NPL site, which includes the Flue Dust OU.

The repository, located on Smelter Hill, is currently owned by Atlantic Richfield. Access is generally controlled by fences and gates. The site is also patrolled by a security force during the night-time hours. There are minor signs of access violations by the public. Reclamation, ground and surface water controls and institutional controls for the larger site will be finalized under the ARWWS OU.

2 Question B - Are the assumptions used at the time of remedy selection still valid?

At this time, EPA is not aware of changes to the ARARs (i.e., RCRA) identified in the ROD that would affect protectiveness of the repository. In addition, land use, anticipated land use, or other exposure pathways have not changed at the site. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., ground and surface water which were deferred under this ROD) and evaluation of any new ARARs (i.e.,arsenic MCL) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

Given the amount of leachate still being collected, a further evaluation of the repository system (liner and cover) will be conducted during development of the Final Smelter Hill Repository Complex Post-Closure Operation and Maintenance Plan. Further evaluations of the effectiveness of the remedy will also be conducted through review of the Smelter Hill Repository Complex Post-Closure O&M Reports

D Protectiveness Statement

The remedy for the Flue Dust Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Flue dust, a principal threat waste at the site, was treated to meet TCLP standards. The treated flue dust was placed and is now contained in an engineered repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal, ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Flue Dust remedy will be further evaluated under the ARWWS OU.

VI ARBITER OPERABLE UNIT

A Removal Action Summary

1. Location and History

The Arbiter Plant is located approximately one mile east of Anaconda, adjacent to and south of Warm Springs Creek (Figure 3). The Arbiter Plant was a copper refining plant designed to produce cathode copper from sulfide ores using an ammonia leach. The plant operated briefly from August 1974 to November 1977. Wastes produced by the plant, including arsenic, cadmium, lead and zinc, were slurried to disposal ponds adjacent to the plant.

2 Remedy Selection

EPA issued an Action Memorandum in 1991 requiring the removal of Arbiter wastes and on-site disposal. The removal action provided for the excavation of wastes from the bunkers and ponds located at the former Arbiter Plant and the disposal in an on-site repository constructed to meet applicable RCRA Subtitle C and Montana Hazardous Waste Act design requirements.

3 Summary of Removal Action

Waste material from two ponds east of the Arbiter Plant and four concrete bunkers behind the plant was excavated and taken to Smelter Hill for disposal in a RCRA C repository. The excavation of the Arbiter material began in July 1992 and was completed in December 1992. The material removed consisted of about 160,000 cubic yards of solids, sludge, and water. Due to the wet nature of the material, dry materials were added to reduce the moisture content prior to placement in the repository. About 70,000 cubic yards of contaminated tailings from the Old Works Tailings Pond, adjacent to Warm Springs Creek, were hauled to the Arbiter Ponds and mixed with the Arbiter sludge. Another 45,000 cubic yards of contaminated soil were excavated from an area south of the Arbiter Ponds and mixed with the sludge. This resulted in a total quantity of material hauled and placed in the repository of about 275,000 cubic yards. Closure of the repository was completed in November 1994.

4 Operation and Maintenance

EPA approved an Interim Post-Closure Operation and Monitoring Plan for the Smelter Hill Repository Complex (SHRC), dated August 1996 to include ground water monitoring, leachate management, post-closure cover inspection and monitoring, surface water diversion system maintenance, and site security. A pre-final inspection of the remedial action was completed in March of 1995, with a final inspection completed during the summer of 1996. EPA approved the Construction Completion Report on September 30, 1996.

EPA receives annual monitoring and maintenance reports for the Smelter Hill Repository Complex which includes the Flue Dust, Arbiter, Beryllium and Aspen Hills repositories. Ground water is collected from five SHRC monitoring wells (Figure 4). The 2004 monitoring results indicate that all constituents were consistent with historic background levels with the exception of arsenic in Monitoring Well 3 which exceeded the Maximum Contaminant level (MCL) for dissolved arsenic (139 ug/l). A further evaluation of site groundwater will be conducted in the review of the Final Smelter Hill Repository Complex Post-Closure Operation and Maintenance

Plan.

Leachate is monitored on a quarterly basis and is pumped from the repository when the leachate level reaches an elevation approximately one foot from the bottom of the collection sump. No leachate pumping was required in 2004. A graphical presentation of cumulative volume pumped versus time is shown on Figure 6.

The Arbiter repository cover is inspected annually and was rated as good (25 - 35% vegetation cover) in 2004 (Table 3). Signs of cover erosion or disturbance were identified in the northwest corner. Bare areas were repaired and re-seeded in 2004.

Weeds and debris are routinely removed from ditches and culverts. Weed spraying is also conducted annually.

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last Five-Year Review the status of the operable unit continues to be in the Interim Operation and Maintenance (O&M) phase. The OU is in interim status because the Arbiter Removal Action deferred cleanup of surface and ground water to the Anaconda Regional Water, Waste & Soils Operable Unit. The O&M will remain in interim status until the final M&M Plans are completed under the ARWWS OU.

2 Site Inspection

A site inspection was conducted on August 17, 2005. Generally, the repository appeared to be functioning properly.

The former excavation areas have been reclaimed under the OW/EADA OU. The main Arbiter Ponds are now used by the County as a Class III land fill.

C Assessment

1 Question A - Is the remedy functioning as intended by the decision documents?

The remedy appears to be functioning as designed. The leachate concentrations are generally clean (less than MCLs). Leachate collected is measured and sampled on an annual basis. After twelve years, leachate is still being produced. Volumes and metal concentrations of the leachate have decreased over time. The repository appears to be functioning as designed. Both the vegetation performance and erosion of the cover will continue to be monitored on an annual basis.

Atlantic Richfield has in place and continues to enforce, a Health and Safety Plan at Anaconda Smelter NPL site, which includes the Smelter Hill Complex.

The repository complex, located on Smelter Hill, is currently owned by Atlantic Richfield.

Access is generally controlled by fences and gates. The site is also patrolled by a security force during the night-time hours. There are minor signs of access violations by the public. Reclamation, ground and surface water controls and institutional controls for the larger site will be finalized under the ARWWS OU.

2 Question B - Are the assumptions used at the time of remedy selection still valid?

At this time, EPA is not aware of changes to the ARARs (i.e., RCRA) identified in the ROD that would affect protectiveness of the repository. In addition, land use, anticipated land use, or other exposure pathways have not changed at the site. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., ground and surface water which were deferred under this ROD) and evaluation of any new ARARs (i.e.,arsenic MCL) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

At this time, EPA is not aware of other information that would affect the protectiveness of the remedy. A further evaluation of the effectiveness of the remedy will be conducted through the review of the Smelter Hill Complex Post-Closure O&M Reports.

D Protectiveness Statement

The removal action completed for the Arbiter Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Arbiter waste, a principal threat waste at the site, was removed and placed in a RCRA designed repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal, ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Arbiter remedy will be further evaluated under the ARWWS OU.

VII BERYLLIUM OPERABLE UNIT

A Remedial Action Summary

1. Location and History

Beryllium is a highly toxic chemical element used primarily as a hardening agent in alloys. A beryllium flake-metal pilot plant and a beryllium oxide pilot plant were operated in the East Anaconda Yards between 1964 and 1968. Immediately following plant closure and during the initial clean up operations in 1968, AMC stored wastes and contaminated materials in drums and disposed of them in the B-2 section of the Opportunity tailings ponds. Additional clean up and decontamination of the beryllium pilot plant occurred in 1972 and those wastes were disposed of in a bunker on Weather Hill (Smelter Hill).

2. Remedy Selection

EPA issued an Action Memorandum in 1991 for the removal of beryllium wastes from the B-2 Pond and Weather Hill and disposal in an on-site waste repository. Removal of wastes for on-site storage would involve excavating the wastes and disposing of them in a repository that meets applicable RCRA subtitle C and Montana Hazardous Waste Act design requirements. The repository would be located on Smelter Hill.

Beryllium wastes, to be removed for disposal, include drums, debris, and adjacent soils contaminated with beryllium above a background concentration of 3 ppm. Sampling would be conducted to confirm that the beryllium would be removed to this level.

3. Summary of Removal Action

Excavation of beryllium at the B2 site began in September 1992. The beryllium contaminated tailings, remains of steel drums, and other debris were placed in 1 cubic yard boxes. The boxes were designed for hauling hazardous waste and were constructed of heavy, multilayered cardboard with thick plastic liners. Boxes were placed in the repository and cement grout was added for additional protection. About 1100 boxes were hauled from the B2 cell to the repository on Smelter Hill.

Excavation of beryllium at the Weather Hill site began in November 1992 and was completed by early January 1993. The material put into the repository consisted of contaminated soil, three concrete cells containing beryllium waste, and a large quantity of bulky items such as wood, steel catwalks, and other miscellaneous demolition debris. About 800 cubic yards of material were hauled to the repository. All of the beryllium wastes have been hauled and consolidated in the repository which was closed in 1994.

4. Operation and Maintenance

EPA approved an Interim Post-Closure Operation and Monitoring Plan for the Smelter Hill Repository Complex (SHRC), dated August 1996 to include ground water monitoring, leachate management, post-closure cover inspection and monitoring, surface water diversion system maintenance, and site security. A pre-final inspection of the remedial action was completed in March of 1995, with a final inspection completed during the summer of 1996. EPA approved the Remedial Action Completion Report on September 30, 1996.

EPA receives annual monitoring and maintenance reports for the Smelter Hill Repository

Complex which includes the Flue Dust, Arbiter, Beryllium and Aspen Hills repositories. Ground water is collected from five SHRC monitoring wells (figure 4). The 2004 monitoring results indicate that all constituents were consistent with historic background levels with the exception of arsenic in Monitoring Well 3 which exceeded the Maximum Contaminant level (MCL) for dissolved arsenic (139 ug/l). A further evaluation of site groundwater will be conducted in the review of the Final Smelter Hill Repsoitory Complex Post-Closure Operations and Maintenance Plan.

Leachate is monitored on a quarterly basis and is pumped from the repository when the leachate reaches the top of the leachate collection sump. No leachate pumping was required in 2004. A graphical presentation of cumulative volume pumped versus time is shown on figure 7.

The Beryllium repository cover is inspected annually and was rated as good (25 - 35% vegetation cover) in 2004 (Table 4). Weeds and debris are routinely removed from ditches and culverts. Weed spraying is also conducted annually.

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last Five-Year Review the status of the operable unit continues to be in the Interim Operation and Maintenance (O&M) phase. The OU is in interim status because the Beryllium Removal Action deferred cleanup of surface and ground water to the Anaconda Regional Water, Waste & Soils Operable Unit. The O&M will remain in interim status until the final M&M Plans are completed under the ARWWS OU.

2 Site Inspection

A site inspection was conducted on August 17, 2005. Generally, the repository appeared to be functioning properly.

C Assessment

1 Question A - Is the remedy functioning as intended by the decision documents?

The remedy appears to be functioning as designed. The collected leachate is measured and sampled on an annual basis. After twelve years, leachate is still being produced. Volumes and metal concentrations of the leachate have decreased over time. The repository appears to be functioning as designed. Both the vegetation performance and erosion of the cover will continue to be monitored on an annual basis.

Atlantic Richfield has in place and continues to enforce, a Health and Safety Plan at Anaconda Smelter NPL site, which includes the Smelter Hill Complex.

The repository, located on Smelter Hill, is currently owned by Atlantic Richfield. Access is generally controlled by fences and gates. The site is also patrolled by a security force during the night-time hours. There are some minor signs of access violations by the public.

Reclamation, ground and surface water controls and institutional controls for the larger site will be finalized under the ARWWS OU.

2 Question B - Are the assumptions used at the time of remedy selection still valid?

At this time, EPA is not aware of changes to the ARARs (i.e., RCRA) identified in the ROD that would affect protectiveness of the repository. In addition, land use, anticipated land use, or other exposure pathways have not changed at the site. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., ground and surface water which were deferred under this ROD) and evaluation of any new ARARs (i.e.,arsenic MCL) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

Additional beryllium materials were discovered in the East Anaconda Yards (EAY) during redevelopment and there is concern that additional beryllium material may still be located on site in the EAY. A further evaluation of potential beryllium disposal locations (within the EAY and elsewhere) and/or evaluation of additional institutional controls will be made under the ARWWS OU. A further evaluation of the effectiveness of the remedy will also be conducted through the review of the Smelter Hill Repository Complex Post-Closure O&M Reports.

D Protectiveness Statement

The removal action for the Beryllium Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. Beryllium, a principal threat waste at the site, was removed and placed in a RCRA designed repository. The repository continues to be monitored with active maintenance, including leachate collection and disposal, ditch cleaning, vegetation repair and ground water monitoring. Site access is controlled through fencing and gates and use of a security patrol. The Beryllium remedy will be further evaluated under the ARWWS OU.

VIII OLD WORKS/EAST ANACONDA DEVELOPMENT AREA OPERABLE UNIT

A Remedial Action Summary

1 Location and History

The OW/EADA OU, located east of Anaconda (Figure 8) contains large volumes of various wastes and debris that originated from copper ore milling, smelting, and refining operations at the Old Works site (Upper and Lower Works) from 1884 to 1902. The Upper Works structural area was constructed between 1883 and 1884. The Lower Works structural area was completed in 1888, approximately one mile east of the Upper Works. Old Works structures included a concentrator, boiler house, "slum" houses, and other factories. The smelters were connected to brick stacks atop adjacent hills by masonry flues. Dismantling started in 1902 and was completed about 1906. Structural remains today consist primarily of massive sandstone blocks and brick rubble.

The smelting process consisted of several steps that generated different types of waste materials. Lower grade ore was crushed and screened and then jigged (agitated) to concentrate the ore material. The Jig Tailings were discarded onto the floodplain. The Heap Roast Slag, composed of partially vitrified slag, was generated by an air cooling process. Jig tailings and slag was sluiced across Warm Springs Creek between 1890 and 1901 to form the Red Sands. Portions of the Red Sands were reworked on several occasions between 1913 and 1943. There are approximately 440,000 cubic yards of floodplain wastes (including jig tailings), 300,000 cubic yards of Heap Roast slag, 600,000 cubic yards of Red Sands, and 32,000 cubic yards in the miscellaneous waste piles.

During Old Works operations, a portion of the Warm Springs Creek channel within the site was realigned and straightened, and levees were installed. All operation ceased at the Old Works when, in 1902, the much larger and more modern Washoe Works (later known as the Anaconda Reduction Works) began production across the valley on Smelter Hill, south of Warm Springs Creek.

In 1991, EPA addressed the immediate concern of releases of contaminants to Warm Springs Creek and to human health through stabilizing the Red Sands adjacent to Warm Springs Creek, repair of breaks in Warm Springs Creek levees, and the installation of fencing to limit access to certain areas of the Old Works site. Further cleanup actions relating to the Red Sands, as well as the remainder of the Old Works OU, were included in the OW/EADA OU.

2 Remedy Selection

In 1994, EPA selected a combination of engineering and institutional controls as the remedy. The remedy also established action levels for arsenic at the OW/EADA. Major components of the remedy include the requirement to:

Construct engineered covers over waste materials in recreational and potential commercial/industrial area exceeding arsenic levels of 1,000 parts per million (ppm);

Treatment of soils exceeding arsenic levels of 1,000 ppm in recreational and potential commercial/industrial areas using innovative revegetation treatment techniques;

Cover or treat soils exceeding arsenic levels of 500 ppm in current commercial/industrial areas;

Provide for future remediation of potential residential or commercial/industrial areas, at the time of development, to the appropriate arsenic action levels through the Anaconda-Deer Lodge County (ADL) Development Permit System (DPS);

Construct surface controls to manage surface water runoff from Stuckey Ridge, Smelter Hill, and throughout the site to minimize discharges to Warm Springs Creek;

Upgrade or repair levees adjacent to Warm Springs Creek to contain 100-year peak flood event and prevent erosion of waste materials into Warm Springs Creek;

Replace bridges or culverts, as necessary, to safely pass the 100-year peak flood event;

Implement institutional controls to protect the above engineering controls and manage future land and water use;

Implement long-term monitoring; and

Preserve, to the extent practicable historic features in the Old Works Historic District.

3 Remedy Implementation

EPA issued a UAO to ARCO to implement the OW/EADA remedy in April 1994. Implementation of the remedy was phased by subarea (Figure 8). See subarea discussions below. Construction of all but one of the subareas is complete. Construction at the last subarea (Industrial Area) began in 2002 and is anticipated to be completed in 2006/2007.

Golf Course Subarea

The Golf Course (Subarea #2) consists of approximately 250 acres of tailings and contaminated soils and the adjacent uplands where remnants of the historic smelter remain. Construction of the golf course began in June 1994 with the grading of the golf course site, including the movement of over 600,000 cy of material. Concurrent with the site grading was the construction of eight sedimentation ponds to control surface water run-on to the site from the adjacent uplands, and placement of riprap along the banks of Warm Springs Creek to protect against erosion.

After the grading, an extensive underdrain piping system, totaling approximately 32,000 linear feet, was installed. The drainage system collects surface water from the site and routes it to two constructed lakes where the water is recycled for irrigation. A soil cover consisting of 18 inches of soil (approximately 600,000 cy) over 2 inches of limerock (47,000 cy) was then placed over

the graded site. This work was completed in 1995. Remaining work on the golf course (tee boxes, greens, irrigation, etc) was completed in 1996. After a one year grow in period, the golf course was open to the public in May of 1997.

Historic Structiure Subarea

The Historic Structure (Subarea #1) is defined by steep slope areas above the golf course that contain remnants of the Upper and Lower Works (i.e., flues and oven foundations). Construction of drainage controls were completed with the golf course construction. Because arsenic concentrations will continue to exceed 1000 ppm, this area has been designated a High Arsenic Area and will require access restrictions.

Red Sands Subarea

The Red Sands (Subarea #4) is defined by the remaining waste materials (red sands and jig tailings) located adjacent to the golf course subarea. Construction of a soil cover and drainage controls on approximately 300 acres began in 1996 and was completed in 1998. This construction also included the reclamation of previously excavated Arbiter removal areas.

East Anaconda Yards Subarea

The East Anaconda Yards (Subarea #5) is defined by an approximately one hundred acre portion of the Smelter Hill facility located adjacent to the community of Anaconda. Construction of drainage controls (new ditches, culverts and outlets) at the EAY began in 1997. Completion of the drainage controls and some soil cover placement was completed in 1998. Most of the EAY were previously covered during the smelter demolition in 1986.

During redevelopment activities in 2004, additional hazardous waste materials and beryllium were discovered. These materials were excavated and disposed of either at an off-site hazardous waste facility (hazardous waste) or the Aspen Hills Repository on Smelter Hill (beryllium). The site was backfilled with clean material and made ready for development

Mill Creek Addition

The Mill Creek Addition is defined by the former community of Mill Creek and adjacent areas. The community was relocated under the Mill Creek Remedial Action. Construction to address contaminated soils began in 1998. A six inch cover soil, placed on approximately 100 acres, and drainage controls, including ditches and sedimentation basins, was completed in early 1999.

Aspen Hills Addition

The Aspen Hills Addition is defined by a portion of the former Smelter Hill railroad loop track that is located within the Aspen Hills Subdivision. Construction of soil covers over waste materials

and the in-situ treatment (lime addition) of contaminated soils also began in the Aspen Hills area in 1997. This work and the construction of drainage controls was completed in 1998.

Drag Strip Subarea

The Drag Strip (Subarea #6) is approximately 200 acres of contaminated soils owned by a local drag racing organization. Construction, consisting of deep tilling and in-situ treatment (lime addition) and drainage controls began in late 1998 and was completed in 1999. Additional work to improve vegetation was conducted in subsequent years. Additional work still may be required.

Industrial Area Subarea

The Industrial Area (Subarea #3) is defined by those properties in private ownership within the OW/EADA OU, including the Anaconda Industrial Park and the former Arbiter Plant. A final design of engineered covers and drainage controls was approved in 2001. Construction began in 2002 on selected lots and is expected to be completed in 2006/2007.

4 Operation and Maintenance

All subareas, with the exception of the Industrial Area, have been determined to be Operational and Functional and are currently in the interim Operational and Maintenance (O&M) phase. Final inspections and Remedial Action Reports were completed for the East Anaconda Yards, Aspen Hills and Mill Creek in 2000 and in 2002 for the Golf course, Red Sands and Drag Strip subareas. Final Monitoring and Maintenance Plans are expected to be completed in 2006 under the ARWWS OU.

EPA receives annual M&M Reports for the OW/EADA OU. The 2004 report indicated that the engineered controls are functioning as designed with minor maintenance required. Vegetation for permanent soil covers over waste materials were rated as good (25-35% cover) (Table 5). Vegetation for temporary soil covers over waste materials (areas where redevelopment was expected) were only rated as fair (15-25% cover) (Table 6). Vegetation for treated soil areas within the Aspen Hills subarea was rated as fair (15-25% cover) while vegetation for treated areas at the Drag Strip subarea was rated as very poor to fair (5-25% cover) (Tables 7 and 8, respectively).

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last five-year review, the status of the site has been under the interim Operational and Maintenance phase (with the exception of the Industrial Area). The OU is in interim status because cleanup of ground and surface water was deferred to the Anaconda Regional Water Waste and Soils OU. The OU is in interim status because the OW/EADA ROD deferred cleanup of surface and ground water to the Anaconda Regional Water, Waste & Soils Operable Unit. O&M will remain in interim status until the final M&M Plans are completed under the ARWWS OU.

Construction began on selected lots within the Industrial Area. Additionally, Individual Site Work Plans (ISWPs) have also been developed for several other landowners. Atlantic Richfield is currently working with the Anaconda Development Corporation on a redevelopment plan for the Industrial Park and Arbiter Plant.

Parties seeking to redevelop in the East Anaconda Yards discovered new waste materials there in 2004. These materials (disposed drums and beryllium) were excavated, tested and properly disposed of at either an off-site hazardous waste facility or at the Aspen Hills repository on Smelter Hill. Additional investigations and/or institutional controls will be required to ensure protective redevelopment for this area..

2 Site Inspections

A site inspection was conducted on August 17, 2005. Generally, the permanent soil cover areas and drainage controls appeared to be functioning properly. Vegetation on the temporary soil cover areas appeared to be stressed and trending in a decreasing manner and requires additional monitoring. An assessment of the future redevelopment potential was discussed for this area. Vegetation in the treatment areas (i.e., Drag Strip) is not fully established and requires additional monitoring with some areas requiring maintenance.

C Assessment

1 **Question A - Is the remedy functioning as intended by the decision documents?**

With the exception of the Industrial Area (remedial action not complete), most of the remedy appears to be functioning as designed. Contaminated wastes and soils have been covered or treated (with arsenic concentrations reduced to below the applicable action level). The soil covers and drainage controls appear to be functioning as designed. Both the vegetation performance and erosion of the cover will continue to be monitored on an annual basis. Revegetation at the Drag Strip subarea has not fully established and is currently being evaluated for additional maintenance action.

Atlantic Richfield has in place and continues to enforce, a Health and Safety Plan at Anaconda Smelter NPL site, which includes the OW/EADA.

With the exception of the Aspen Hills and Industrial Area, most OW/EADA property was transferred to Anaconda-Deer Lodge County in 1994 under a Prospective Purchaser Agreement. Development is being regulated through the SPAOD portion of the county's Development Permit System to protect remedies in currently in place and address contamination encountered by new development. Wastes discovered to date through the redevelopment process have been properly remediated. Final ground and surface water controls and institutional controls will continue to be addressed under the ARWWS OU.

2 **Question B - Are the assumptions used at the time of remedy selection still valid?**

At this time, EPA is not aware of changes to the ARARs (i.e., RCRA, SMCRA) identified

in the ROD that would affect protectiveness of the engineered covers. Potential land use changes by Anaconda-Deer Lodge County are currently being evaluated. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., ground and surface water which were deferred under this ROD) and any new ARARs (i.e., arsenic MCL) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

EPA has recently received information regarding past practices of the disposal of beryllium and other waste at the East Anaconda Yards and other areas of the NPL site. A further investigation of these wastes and evaluation of the effectiveness of the remedy will be completed under the ARWWS OU.

D Protectiveness Statement

The remedy completed at the Old Works/East Anaconda Development Area Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. The remaining remedy at the Industrial Area is also expected to be protective of human health and the environment upon completion. Most waste materials and/or contaminated soils have been covered or treated to below the appropriate action level. The covers and revegetated areas will continue to be monitored with active maintenance. Institutional controls, primarily through the SPAOD portion of the DPS is expected to protect remedies and ensure that development at the site is conducted in a manner protective of human health and the environment. The OW/EADA remedies will be further evaluated under the ARWWS OU.

IX COMMUNITY SOILS OPERABLE UNIT

A Remedial Action Summary

1 Location and History

The Community Soils OU addresses residential soils throughout the entire Anaconda Smelter NPL Site, including potentially contaminated soils and wastes in the communities of Anaconda and Opportunity, as well as rural residential areas. This includes all land use areas (i.e., residential, commercial/industrial, and recreational) within the above communities.

Under an emergency removal action, removal of arsenic-contaminated soils in the Teresa Ann Terrace Subdivision with replacement of topsoil and grass began in 1991 and was completed in September 1992. The removed soils were disposed of in the Red Sands area of the Old Works, and will be dealt with permanently under the Old Works/East Anaconda Development Area remedial action. Work on residential soils consisted of removing 18 inches of contaminated soil from the targeted area and replacing it with 2 inches of limerock overlain by 16 inches of clean soil. In developed yards, topsoil and sod were replaced in the upper 4 inches. In undeveloped areas, the soil was seeded. The clean soil was obtained from an area near Lost Creek.

2 Remedy Selection

In 1996, EPA selected a final remedy for all remaining residential and commercial/industrial soils, including railroad bed materials within and adjacent to the community of Anaconda.

Major components of the remedy for residential soils include:

- Clean up all current residential soils that exceed the residential action level of 250 parts per million (ppm) soil arsenic concentration, through removal and replacement with clean soil and placement of a vegetative or other protective barrier;
- In areas where specific site conditions dictate that removal is not implementable, treatment or other measures (e.g., capping, tilling, and institutional controls) will be taken to reduce arsenic concentrations to below the 250 ppm action level or to prevent exposure;
- Clean up all future residential soils at the time of development that exceed the residential action level of 250 ppm soil arsenic concentration, through the Anaconda-Deer Lodge County (ADLC) Development Permit System (DPS); and
- Implement ICs to provide educational information to all residents describing potential risks, and recommendations to reduce exposure to residual contaminants in soils, and to ensure the long-term viability of this remedy.

Major components of the remedy for commercial/industrial soils include:

- Clean up all current commercial or industrial areas that exceed the commercial/industrial action level of 500 ppm soil arsenic concentration through a combination of revegetative techniques and/or engineered covers; and

- Clean up all future commercial or industrial areas at the time of development that exceed the commercial/industrial action level of 500 ppm soil arsenic concentration through the ADLC-DPS.

Major components of the remedy for the railroad beds include:

- Construct an engineered cover over all contaminated railroad bed material within the community of Anaconda to prevent direct contact with, and reduce potential for erosion and transport of, contaminated materials to residential and commercial/industrial areas;

- Separate the railbed from residential and commercial/industrial areas with a barrier to restrict access to the railbed and to control surface runoff from the railbed through the use of retaining walls and/or curbing; and

- Maintain existing ICs to restrict access.

3 Remedy Implementation

The Remedial Design was completed in 2002. Yard sampling began in 2003 with construction activities within the community of Anaconda beginning in 2004. Approximately 120 yards in Anaconda were remediated in 2004. Approximately 140 yards (125 in Anaconda and 15 rural) will be remediated in 2005. Construction activities are anticipated to be completed in 2006/2007.

The Remedial Design for commercial areas adjacent to the railroad, as well as waste associated with abandoned railroads, is anticipated to be completed in 2005. Construction activities area anticipated to begin in 2005 or 2006.

Remediation of the active railroad line through Anaconda has been moved to the Active Railroad Remedial Design Unit (RDU 5) of the Anaconda Regional Water Waste and Soils OU. The Remedial Design for the line through Anaconda was completed in 2002. Construction is anticipated to begin in 2005/2006.

4 Operation and Maintenance

Once yard cleanup areas are determined to be Operational and Functional, no operation and maintenance is required. Areas that remain above the residential action level (i.e., commercial or railroad areas) or will be evaluated under an appropriate operations and maintenance plan.

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last five year review the Remedial Design for the residential soils has been completed and remedial action initiated. Approximately 125 yards have been remediated under this OU. Remedial Design for the commercial areas is anticipated to be completed in 2005. All contaminated materials removed have been properly disposed of at a designated on-site repository.

Concern with exposure to other sources of contamination (i.e., attic dust, basement soils) has been raised by residents and local officials during the yard clean up activities. EPA is currently conducting investigations to determine the appropriate action. EPA is also working to develop a Community Protective Measures Program to inform and educate the public regarding risks to contaminated soils as well as provide a vehicle to continue to address concerns with contaminated materials

2 Site Inspection

A site inspection was not conducted since the remedial action is not yet complete.

C Assessment

1 Question A - Is the remedy functioning as intended by the decision documents?

The remedy (yard removals) conducted under both the removal and remedial actions appear to be functioning as designed. Contaminated soils have been removed and replaced with clean backfill. The backfill areas appear to be functioning as designed (yards, driveways, etc.).

2 Question B - Are the assumptions used at the time of remedy selection still valid?

At this time, EPA is not aware of changes to the ARARs identified in the ROD that would affect protectiveness. EPA is currently evaluating additional sources of contamination (i.e., attic dust) that may be contributing to the overall residential exposure. New sources will be addressed under a separate plan. EPA is also currently working with Anaconda-Deer Lodge County in the review of current and anticipated land use and integrating those findings into the appropriate clean up design. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., institutional controls) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

Concern regarding the affect of attic dust to the protectiveness of the remedy has been raised. EPA is currently evaluating the potential exposures to attic dust as well as any pathways to the living space. It is anticipated that a protocol will be developed to further evaluate and remediate any risks due to attic dust. This evaluation will be completed under the CS OU.

D Protectiveness Statement

The yard cleanup actions for the Community Soils Operable Unit of the Anaconda Company Smelter NPL Site is protective of human health and the environment. The Remaining remedy is also expected to be protective of human health and the environment upon completion. The yard cleanup actions completed to date have addressed the immediate threats by removing the most contaminated soils in residential areas. Residual soils have been covered or treated to below the appropriate action level for arsenic. The backfill areas will continue to be monitored with active maintenance. Institutional controls, primarily through the SPAOD portion of the DPS will ensure that the remedies are protected and that development at the site is conducted in a manner protective of human health and the environment. Remaining yard cleanups as well as other commercial and recreational areas are expected to also be protective of human health and environment. The Community Soils remedy will be further evaluated under the Anaconda Regional Water Waste & Soils OU.

X REGIONAL WATER, WASTE AND SOILS OPERABLE UNIT

A Remedial Action Summary

1 Location and History

This OU combines the former Anaconda Regional Water and Waste, Anaconda Soils, and Smelter Hill OU's (Figure 2). No further activities will be required under the Anaconda Soils and Smelter Hill OU's. The ARWWS OU is intended to be the last OU of the Anaconda Smelter NPL Site and will address all remaining issues not addressed under other remedial actions. This OU will continue to address potential impacts to surface and groundwater from soils and waste sources such as tailings and slag. This OU will address both the human and environmental risks associated with site-related contamination that have not been addressed by other OUs. This OU will also bring closure to all previous actions taken at the site.

2 Remedy Selection

In 1998, EPA selected the final remedial action to be taken at the Anaconda Smelter NPL site. The Selected Remedy for the ARWWS OU is comprised of several remedies for the waste media types found throughout the OU. The major components of these remedies are generally described below.

Soils and Waste Materials

- Reduction of surficial arsenic concentrations to below the designated action levels of 250 parts per million (ppm) for residential, 500 ppm for commercial/industrial, and 1,000 ppm for recreational through a combination of soil cover or in situ treatment.
- Reclamation of the soils and waste area contamination by establishing vegetation capable of minimizing transport of COCs to Ground water and windborne and surface water erosion of the contaminated soils and waste areas. This vegetation will also provide habitat consistent with surrounding and designated land uses.
- Partial removal of waste materials followed by soil cover and revegetation for areas adjacent to streams. Removed material will be placed within designated Waste Management Areas (WMAs).

Ground Water

- For alluvial aquifers underlying portions of the Old Works and South Opportunity Subareas, clean up to applicable State of Montana water quality standards through use of soil covers and removal of sources (surface water) to ground water contamination and natural attenuation.
- For the bedrock aquifers and a portion of the alluvial aquifer in the Old Works/Stucky Ridge and Smelter Hill Subareas, waiver of the applicable ground water standard. The aquifers underlying these subareas cannot be cost effectively cleaned up through reclamation, soil cover, or removal of the sources (wastes, soils, and tailings) of the ground water contamination.

- Reclamation of contaminated soils and waste source areas with revegetation is required, which will contribute to minimizing contamination movement into the aquifers.

- For portions of the valley alluvial aquifers underneath the Old Works/Stucky Ridge, Smelter Hill, and Opportunity Ponds Subareas where ground water is underlying waste-left-in-place, point-of-compliance (POC) monitoring to ensure contamination is contained at the perimeter boundary of the designated WMA. Should POC monitoring show a spread of contaminants beyond the boundary of a WMA, institute treatment options for the ground water where practicable.

Surface Water

- Reclamation of contaminated soils and engineered storm water management options to control overland runoff into surface waters.

- Selective source removal and stream bank stabilization to minimize transport of COCs from fluvially deposited tailings into surface waters. Removed material will be placed within a designated WMA.

Institutional Controls (ICs) and Operations and Maintenance (O&M)

- The remedy will employ ICs and long-term O&M for the OU to ensure monitoring and repair of implemented actions. These actions will be coordinated through development of an ICs Plan and O&M Plan and will allow for communication with local government and private citizens. The plans will function as a tracking system for the agencies and describe and plan for potential future land use changes.

- The remedy calls for a fully-funded ICs program at the local government level. The Anaconda-Deer Lodge County (ADLC) government will be responsible for on-going oversight of O&M in the OW/EADA OU, implementation of a Development Permit System (DPS) in the SPAOD, and provision of public information and outreach through a Community Protective Measures program.

- In addition, the remedy will bring closure to previous response actions within the site that are already implemented, such as the Flue Dust remedy or the Old Works remedy, primarily through long term O&M for some or all of those actions which are integrated into this remedy.

3 Remedy Implementation

The ARWWS OU has been divided into 17 Remedial Design Units (RDUs) (Figure 9). Remedial action has been completed on two of the 17 RDUs (RDU 4 - Anaconda Ponds and

RDU 11-Cashman Concentrate). Remedial action is underway at several other RDU's including RDU 1 - Stucky Ridge, RDU 3- Smelter Hill Uplands, RDU 8 - Opportunity Ponds and the West Galen Expansion Area. Remedial design activities are currently ongoing at all remaining RDU's and is anticipated to be completed in 2005/2006.

4 Operation and Maintenance

RDU 4 (Anaconda Ponds) has been determined to be Operational and Functional and is currently in the interim Operational and Maintenance (O&M) phase. Pre-final and final inspections were completed in 2001 and the Remedial Action Completion Reports was completed in 2003. The O&M is considered interim until final M&M Plans are completed for the ARWWS OU.

RDU 11(Cashman Concentrate) has been determined to be completed as all materials were transported off-site to an approved facility (Montana Resources Inc.) for reprocessing. No Operational and Maintenance (O&M) is required. Pre-final and final inspections were completed in 2004 and the Remedial Action Completion Report was completed in 2004.

EPA receives annual M&M Reports for the Anaconda Ponds RDU. The 2004 report indicated that the engineered controls are functioning as designed with minor maintenance required. Vegetation on soil covers over waste materials in general were rated as good to excellent (25->35% cover) (Table 9). Vegetation on the dike faces was generally rated as fair (10-20% cover) with indications of bare areas (Table 10).

B Five-Year Review Findings

1 Progress Since Last Five-Year Review

Since the last five year review, remedial action was completed at two RDU's and construction was initiated at several other RDU's. Remedial Design is ongoing at all remaining RDU's and is anticipated to be completed in 2005/2006.

2 Site Inspection

A site inspection of the Anaconda Ponds was completed on August 17, 2005. The remedy at the Anaconda Ponds appears to be functioning as designed. Vegetation on the dike faces appears to be trending on the decrease and additional maintenance was recommended.

C Assessment

1 Question A - Is the remedy functioning as intended by the decision documents?

The Anaconda Ponds remedy appears to be functioning as designed. Contaminated

wastes have been covered (with arsenic concentrations reduced to below the applicable action level). The soil covers and drainage controls appear to be functioning as designed. Both the vegetation performance and erosion of the cover will continue to be monitored on an annual basis. Vegetation on the dike faces may require additional monitoring and maintenance.

Atlantic Richfield has in place and continues to enforce, a Health and Safety Plan at Anaconda Smelter NPL site, which includes the Anaconda Ponds.

2 Question B - Are the assumptions used at the time of remedy selection still valid?

At this time, EPA is not aware of changes to the ARARs (i.e., RCRA) identified in the ROD that would affect protectiveness of the completed engineered covers. In addition, land use, anticipated land use, or other exposure pathways has not changed at the site. A further evaluation of the effectiveness of the remedy in reducing all exposure or exposure pathways (i.e., ground and surface water) and any new ARARs (i.e., arsenic MCL) will be completed under the ARWWS OU.

3 Question C - Has any other information come to light that could call into question the protectiveness of the remedy?

At this time, EPA is not aware of other information that would affect the protectiveness of the remedy. A further evaluation of the effectiveness of the remedy will be completed under the ARWWS OU.

D Protectiveness Statement

The remedies completed for the Anaconda Ponds and Cashman Concentrate Remedial Design Units of the Anaconda Regional Water Waste and Soils Operable Unit of the Anaconda Company Smelter NPL Site are protective of human health and the environment. The remaining remedy at the other Remedial Design Units are also expected to be protective of human health and the environment upon completion. Waste materials and/or contaminated soils, to date, have been covered or treated to below the appropriate action level. The covers and revegetated areas will continue to be monitored with active maintenance. Institutional controls, primarily through the SPAOD portion of the DPS will ensure that the remedies are protected and that development at the site is conducted in a manner protective of human health and the environment. The remedies will be further evaluated under the remaining design units at the Anaconda Regional Water Waste & Soils OU.

XI Recommendations and Followup Actions

Since the site is still undergoing a final remedial evaluation under the Anaconda Regional Water, Waste & Soils OU, the following recommendations will be addressed under existing designs, management plans or monitoring plans:

- Provide additional monitoring and/or maintenance of the vegetation at the Drag Strip Subarea of the OW/EADA OU;
- Evaluate the redevelopment potential and the use of temporary covers at the Red Sands Subarea of the OW/EADA OU;
- Provide additional monitoring and/or maintenance of the dike face soil covers at the Anaconda Ponds;
- Investigate the potential for additional beryllium and/or hazardous waste at the East Anaconda Yards and/or evaluate the use of institutional controls to ensure protectiveness at the time of redevelopment;
- Characterize the uncapped portion of the East Anaconda Yards and/or evaluate the use of institutional controls to ensure protectiveness at the time of redevelopment;
- Determine final disposition of repository leachates;
- Develop protocol to address concerns with attic dust:
- Develop long term implementation plan for Institutional Controls; and
- Provide air quality monitoring in the community of Opportunity.

XII Next Review

By statute, this site requires ongoing five-year reviews. The next review will be conducted within five years of the completion of this five-year review report. The completion date is the date of the signature shown on the signature cover attached to the front of the report.

In the future, the five-year review will be more comprehensive and will include components of the ARWWS Monitoring and Maintenance Plan. The reporting of remedial action performance will likely be reorganized by geographical area, or Remedial Design Units to be determined under the ARWWS OU, rather than by the previous operable unit designations.

FIGURES

TABLES